

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-19 and 21-27 remain active in this case. Applicants have amended Claims 16 and 18, have canceled Claim 20 and have added new Claim 27.

In the outstanding Office Action, Claims 1-7 and 26 were allowed; Claims 8-11, were rejected under 35 USC § 103(a) as being unpatentable over Lin et al. (U.S. Patent Publication No. 2002/0182824) in view of Lu et al. (U.S. Patent No. 6,008,540); and Claims 14, 16, 17, 21, and 22 were rejected under 35 USC § 103(a) as being unpatentable over Lin et al. (U.S. Patent Publication No. 2002/0182824) in view of Lu et al. (U.S. Patent No. 6,008,540) further in view of Gaynor (U.S. Patent No. 6,566,243). However, Claims 12, 13, 15, 18-20, and 23-25 were indicated as including allowable subject matter if rewritten in independent form.

First, Applicants acknowledge with appreciation the indication that Claims 1-7 and 26 are allowable and that Claims 12, 13, 15, 18-20 and 23-25 include allowable subject matter.

Turning now to the rejection of independent Claim 8, Applicants respectfully submit that Lin et al. in view of Lu et al. fail to disclose all of the elements of independent Claim 8.

Claim 8 recites "...a particulate insulating layer filling at least a lower portion of the trench and comprising first and second insulating particles, an average diameter of the second insulating particles being smaller than an average diameter of the first insulating particles."

Lin et al. discloses that flowable insulating layer 210 is a flowable silicon oxide layer and insulating layer 212b is a doped silicon oxide layer.¹ Lin et al. does not disclose that the flowable insulating layer 210 and the insulating layer 212b include insulating particles as is recited by independent Claim 8.

¹ Lin et al. paragraphs [0022] and [0026].

The Office Action states that Lu et al. discloses insulating particles with the particle size relationship recited in Claim 8.² Fig. 5 of Lu et al. actually discloses a surface filling adhesion, in which a gap fill material layer 520 is formed on a surface of a xerogel 510. The xerogel 510 includes open pores 514-516 on the surface thereof and includes interior pores 512 away from the surface.³ The gap fill material layer 520 fills pores of a specified size.⁴ The gap fill material layer 520 includes projections on the lower surface thereof, and the projections fill the open pores 514-516 of the xerogel 510.⁵ Neither the **pores** of the xerogel 510 nor the gap fill material **layer** 520 are first or second insulating **particles** as Claim 8 recites. The gap fill material layer 520 is not an insulating particle because Lu et al. discloses that the gap fill material layer fills pores in the xerogel. Claim 8 recites that the particulate insulating layer, which contains the insulating particles, fills at least a lower portion of the trench.

Applicants respectfully submit that Claim 8 (and its dependent Claims 9-15) patentably distinguish over the combination of Lin et al. in view of Lu et al.

Turning now to the rejection of Claim 16 as being obvious by the combination of Lin et al. in view of Lu et al. further in view of Gaynor, Applicants respectfully submit that the amendment to Claim 16 overcomes this rejection.

Claim 16 has been amended to include the elements of Claim 20. The Office Action stated that Claim 20 would be allowable if rewritten in independent form.⁶ Applicants respectfully submit that Claims 16 (and its dependent Claims 17-19 and 27) be allowed.

Turning now to the rejection of Claim 14 as being obvious by the combination of Lin et al. in view of Lu et al. further in view of Gaynor, Applicants respectfully submit that the combination of references does not teach or suggest every element of Claim 14.

² Office Action page 3.

³ Lu et al., Col. 7, lines 41-43.

⁴ Lu et al., Col. 7, lines 33-39.

⁵ Lu et al., Col. 7, lines 43-47 and Fig. 5.

⁶ Office Action, page 2.

Gaynor does not disclose "...a particulate insulating layer comprising first and second insulating particles, an average diameter of the second insulating particles being smaller than an average diameter of the first insulating particles," as is recited by Claim 14. Gaynor discloses a porous silicalite/binder material 60 in FIG. 1d. The porous silicalite/binder material 60 includes silicalite particles 50 bound together by crosslinking or polymerizing binder molecules 54 as shown in FIG. 1c. As Fig. 1d of Gaynor shows, there are not first and second insulating particles in the porous silicate binder material as is recited in Claim 14, but rather a single porous silicate/binder material.⁷ Applicants respectfully submit that Claim 14 be allowed for the additional reasons provide above.

Turning now to the rejection of Claim 21 as being obvious by the combination of Lin et al. in view of Lu et al. further in view of Gaynor, Applicants respectfully submit that the combination of references does not teach or suggest every element of Claim 21.

Claim 21 recites "...a particulate insulating layer filling at least a lower portion of the trench and including first and second particulate insulating layers, the first particulate insulating layer comprising first insulating particles with no binder, and the second particulate insulating layer covering an upper surface of the first particulate insulating layer and comprising second insulating particles and an insulating binder."

As described above, neither Lin et al. nor Lu et al. disclose "...a particulate insulating layer comprising insulating particles." Gaynor discloses a porous silicalite/binder material 60 in which silicalite particles 50 are bound together with binder.⁸ Gaynor does not disclose "a particulate insulating layer comprising insulating particles with **no binder**" as is recited in Claim 21 (emphasis added).

⁷ Gaynor, Fig. 1d.

⁸ Gaynor, Col. 6 lines 56-67 and Col. 7 lines 1-7.

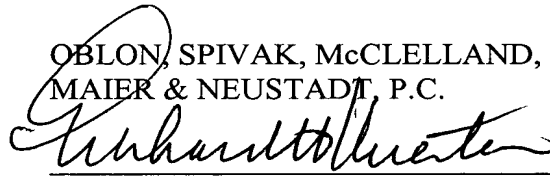
Applicants respectfully submit that Claim 21 (and its dependent Claims 22-26) patentably distinguish over the combination of Lin et al. in view of Lu et al. further in view of Gaynor.

Turning now to the objection to Claim 18 as being dependent from a rejected base claim, Applicants respectfully submit that the amendment to Claim 18 overcomes the objection. Claim 18 was rewritten to be in independent form, which the Office Action stated would be allowable.⁹

Support for new Claim 27 is found in the Specification at page 14 lines 18-20, for example, and therefore, the addition of Claim 27 is not believed to raise an issue of new matter.

Consequently, in view of the above amendments and comments, it is respectfully submitted that Claims 8-19 and 21-27 are in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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⁹ Office Action page 2.